

Two-Stage Vehicle for
University of California Radiation Laboratory

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PROGRESS REPORT NO. 6

For the period between
1 April 1958 - 30 April 1958

Subcontract No. 108, Appendixes B, C, and D

Submitted by
COOPER DEVELOPMENT CORPORATION
Monrovia, California

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Subcontract No. 108, Appendices A, C, and D

This informal monthly progress report is the sixth of a series submitted in partial fulfillment of Subcontract No. 108. The information is regarded as preliminary and subject to further verification and analysis.

I. Delivery

Delivery of materials to PPG was completed during April, with the exception of 24 head assemblies, 16 No. 427 motors, 20 sets of ASP fins, and 16 nozzles for No. 427 motors. These items will be shipped, completing delivery, by 16 May 1958.

II. Electronics

Delivery of electronic assemblies was completed during April.

III. Wind Tunnel Tests

The data for the second wind tunnel test was received from the NACA Ames Aeronautical Laboratory on 3 April. Examination of the data showed that the test results were very similar to the results of the test conducted in January. Reduction and analysis of the data has been delayed due to the urgency of preparations for field operations. However, a report will be sent to UCRL as soon as analysis is completed.

IV. Field Tests

Two two-stage vehicles were test fired at WSPG on 15 and 18 April 1958. Both vehicles were identical to the rounds sent to PPG, except that the heads were modified to accommodate DPN-41 radar beacons. This modifica-

tion included lengthening the programmer section, removing the recovery transmitter and battery pack, and installing a mounting platform.

Both rounds were covered by radar skin tracking, and by Igor and Askania cameras. The launchings were also covered by Fastex cameras to obtain launch velocity data.

Launching of the first round was delayed because three radar beacons were found to be inoperable before one was installed in good condition. Examination of the Igor and Askania data indicated satisfactory vehicle performance. All functions operated properly, except deployment of the second-stage parachute. The head was severely damaged when it was recovered the following day. The second-stage chute had remained in the can, apparently because the plate between the two parachutes had caught on the lip of the can.

The second round was launched on 16 April. For this round, the parachutes were re-worked and the plate was removed. The radar beacon failed at 20 seconds, but Igor, Askania, and radar skin tracking continued. All functions occurred properly. Radar tracking was lost at about 150,000 feet MSL on the downward portion of the trajectory. For this reason, immediate recovery was not possible. A ground search was instituted the following day but failed to locate the head. Finally, the head was sighted from the air, and a search party recovered it on 22 April. The head was in excellent condition. The filter was intact, the fore and aft seals had functioned, and the head flotation tube was inflated. The

parachute flotation tube had actuated, but was not inflated when it was recovered. The nose leaked water slightly. The leakage was found to be caused by incorrect setting of the forward ball seal. A fixture for setting this seal has been made to insure correct settings in the future.

VI. Field Service

The CDC field operations group is at PPG, preparing for the launchings to take place there.